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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/787,186	03/15/2001	Martin Rudolf Behringer	12406-018001	6550
26161	7590	07/19/2005	EXAMINER	
FISH & RICHARDSON PC 225 FRANKLIN ST BOSTON, MA 02110			HU, SHOUXIANG	
			ART UNIT	PAPER NUMBER

2811

DATE MAILED: 07/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/787,186

Applicant(s)

BEHRINGER, MARTIN RUDOLF

Examiner

Shouxiang Hu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 May 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 5-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 5-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Objections***

Claim 19 is objected to because of the following informalities and/or defects:

The term of "from the one another" should read as: --from one another--.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

Claims 5-19 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 5, 18 and 19 each recite the subject matters about the separated sub-monolayer islands; however the specification lacks an adequate description regarding how such separated sub-monolayer can be formed, especially regarding what type of patterning method and/or mask is used to pattern such separated islands, while ensuring the remaining extremely thin sub-monolayer be kept intact.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 5-19, insofar as being in compliance with 35 U.S.C. 112 and as being in best understood in view of the claim objections above, are rejected under 35

U.S.C. 102(b) as being anticipated by Oiu et al. ("Oiu"; US 5,396,103).

Oiu discloses a semiconductor component (Fig. 12; also see Col. 13, lines 34 - Column 14, Row 19), comprising: a first semiconductor material (ZnSe) with a first lattice constant and combined with a second semi-conductor material (ZnTe) with a second lattice constant within one and the same semiconductor body, wherein the first and second lattice constants are different, and the second semiconductor material is more highly dopable than the first semiconductor material (see col. 13, lines 67 through Col. 14, line 19). The first semiconductor material (ZnSe) in Oiu forms a matrix that can be regarded as being formed of a sequential layers; each of the sequential layers can be regarded as being formed of several sub-layers (ZnSe). Within each of such sequential layers, several sub-monolayer islands of the second semiconductor material (ZnTe) are imbedded therein (see Col. 13, lines 59-63), and whose separations from one another decrease in the direction from the main surface (layer under the electrode; also see Figs. 10 and 12) towards the semiconductor body (see Col. 13, lines 41-48). It is noted that each of the second semiconductor material sub-monolayer layer (ZnTe) in Oiu can be naturally regarded as a separated island embedded in the matrix of the first semiconductor material, since the amount of coverage by each of the ZnTe sub-monolayer in each layer of ZnSe is an adjustable parameter (see col. 13, lines 55-59),

i.e., it means the area of each of the ZnTe sub-monolayer can be small than the whole area of the ZnSe layer.

Moreover, it is noted that the effective average doping level of the main surface layer in Oiu should be naturally greater than  $10^{19} \text{ cm}^{-3}$ , since an ohmic contact has been established therewith.

It is also noted that the top layer in Fig. 12 of Oiu is formed of ZnTe covering the full main surface underlying it; and it can be as thin as 0.5 monolayers (see col. 14, lines 4-6), which therefore should be naturally thinner than 10 nm.

### ***Response to Arguments***

Applicant's arguments filed on May 11, 2005 have been fully considered but they are not persuasive. And, examiner's responses to these arguments have been fully incorporated into the above claim rejections.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

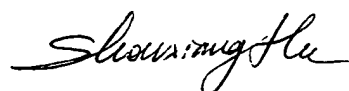
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shouxiang Hu whose telephone number is 571-272-1654. The examiner can normally be reached on Monday through Thursday, 7:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on 571-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SH

July 14, 2005



**SHOUXIANG HU**  
**PRIMARY EXAMINER**